



# Australian Bureau of Statistics

## **6285.0 - Involvement in Organised Sport and Physical Activity, Australia, Apr 2007**

Previous ISSUE Released at 11:30 AM (CANBERRA TIME) 19/12/2007

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## **Summary**

### **Main Features**

**04/04/2008 Note:** Additional Data Cubes released to provide supplementary state data to that previously released in *Involvement in Organised Sport and Physical Activity, Australia, April 2007* on 19 December 2007. These data cubes present results for individual states and territories.

### **NOTES**

#### **ABOUT THIS PUBLICATION**

This publication presents results from the Survey of Involvement in Organised Sport and Physical Activity conducted in April 2007. It presents information on the number of persons aged 15 years and over who were involved in organised sport and organised physical activity over a 12 month period.

#### **ABOUT THIS SURVEY**

The 2007 Survey of Involvement in Sport and Physical Activity was conducted throughout Australia as part of the Australian Bureau of Statistics (ABS) Monthly Population Survey (MPS).

It provides details on players and participants in organised sport and physical activity and for persons involved in non-playing roles during the 12 months prior to interview in April 2007. A description of the characteristics of each group is provided, as well as information about whether any payment was received and the amount of time spent on each type of involvement. Further information is provided about the types of non-playing roles undertaken, whether a course or qualification had been completed for these roles, and whether any involvement was with school or junior sport. For non-playing roles, comparisons are also presented using data from the 1997, 2001 and 2004 Involvement in Sport surveys.

Differences between data items highlighted in the Summary of Findings are statistically significant. See Technical Note (paragraph 11) for further details.

## **ROUNDING**

As estimates have been rounded, discrepancies may occur between sums of the component items and totals.

## **INQUIRIES**

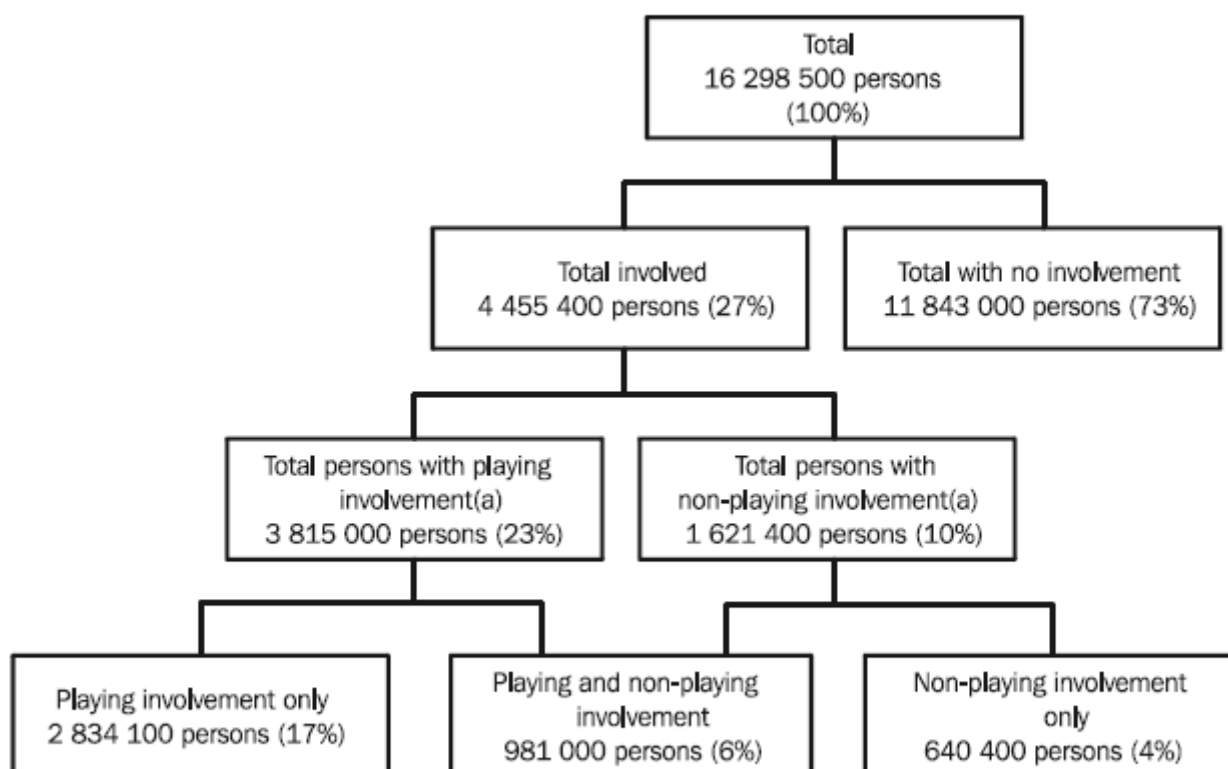
For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070.

## **SUMMARY COMMENTARY**

### **INTRODUCTION**

Persons who are involved in organised sport and physical activity can be players, or be involved in non-playing roles. Non-playing roles include coach, instructor or teacher; referee or umpire; committee member or administrator; scorer or timekeeper; medical support; or other role. A person can be involved in more than one kind of sport or physical activity and in more than one role.

In the 12 months prior to April 2007, an estimated 4.5 million persons aged 15 years and over reported that they were involved in organised sport and physical activity. This represents 27% of all persons aged 15 years and over. Persons involved in organised sport and physical activity included 3.8 million players (23% of persons aged 15 years and over), as well as 1.6 million persons involved in non-playing roles (10%). Of the 1.6 million persons with a non-playing role, 61% also had a playing role (Table 1).



(a) The categories of Total players and Total non-players are not mutually exclusive, as some players also have non-playing involvement.

## CHARACTERISTICS OF PERSONS INVOLVED

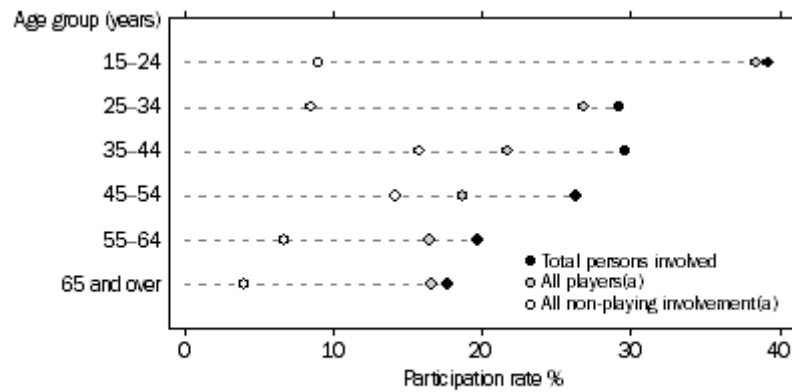
### Sex

Males were more likely to be involved in organised sport and physical activity than females (30% of males compared to 24% of females). Males had higher participation rates both as players (26%) and non-players (11%) than females (20% as players, 9% as non-players) (Table 1).

### Age

Persons aged 15-24 years old had the highest participation rate (39%), while the lowest participation rate was for persons aged 65 and over (18%) (Table 1).

### PLAYING, NON-PLAYING AND TOTAL INVOLVEMENT RATES, By age



(a) The categories of 'All players' and 'All non-playing involvement' are not mutually exclusive, as some players also have non-playing involvement.

## Country of birth

The highest rate of involvement was for persons born in Australia (31%), followed by persons born in the main English speaking countries (see Glossary for definition) at 26% and persons born in other countries at 13% (Table 1).

## Area of usual residence

The participation rate for persons residing in the six state capital cities (26%) was lower than for the rest of Australia (30%) (Table 1).

## Labour force status

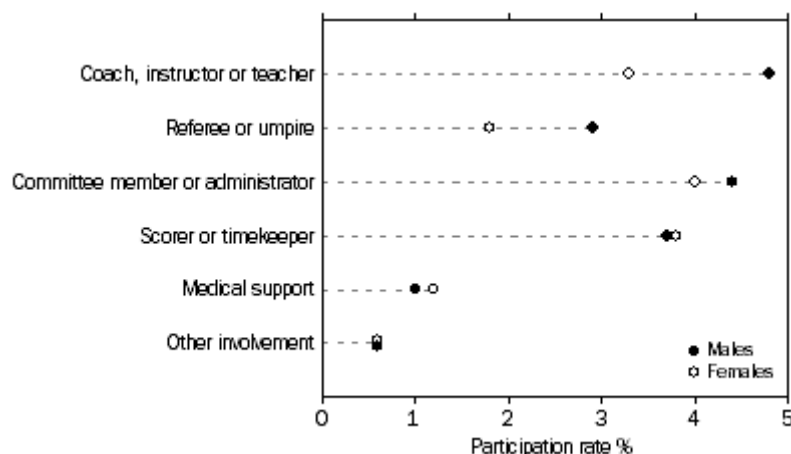
Persons who were employed in the week prior to interview were the most likely to be involved in organised sport and physical activity, at 32% (3.3 million persons). Unemployed persons had a participation rate of 25% (120,900 persons), and the lowest participation rate was for persons not in the labour force, at 20% (1.1 million persons) (Table 1).

## INVOLVEMENT IN NON-PLAYING ROLES

Of the 1.6 million persons with non-playing involvement

- 60% had one non-playing role
- 25% had two non-playing roles
- 15% had three or more non-playing roles (Table 3).

## PARTICIPATION IN NON-PLAYING ROLES, By type of involvement and sex



### Non-playing roles associated with school and junior sport

Of the 1.6 million persons involved in non-playing roles, 904,400 (56%) were associated with school or junior sport for at least some of their non-playing involvement. Persons involved as a coach, instructor or teacher were the most likely to be associated with school or junior sport (72%). The rate of involvement in school or junior sport was higher for females (60%) compared with males (52%) (Table 10).

### Qualifications for non-playing roles

Just over one third (38% or 609,700) of all persons involved in non-playing roles reported that they had completed a course or qualification relevant to their role. The highest proportion of persons with qualifications appropriate to their involvement were in a medical support role. Of the 178,200 persons involved in this role, 87% were qualified (Table 9).

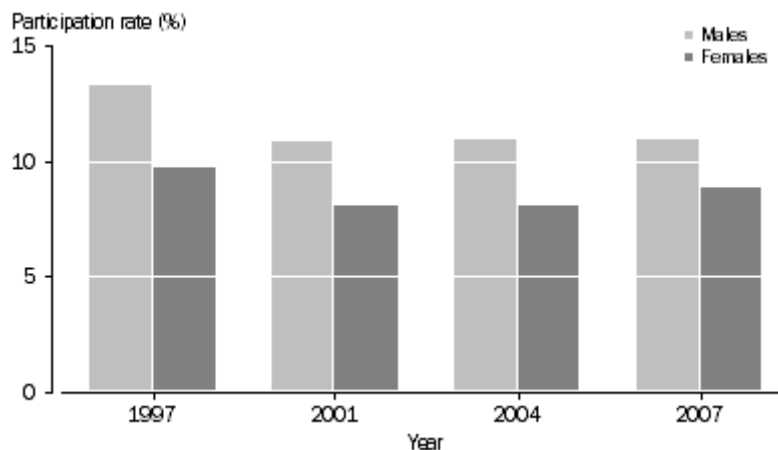
### Comparison of 1997, 2001, 2004 and 2007 data

In 1997, 2001 and 2004 similar surveys were conducted by the ABS. Due to some differences in the questions asked and survey methodologies, caution should be exercised when making comparisons between the surveys, however, some comparisons can be made for persons in non-playing roles. For information about the differences between the surveys, see paragraphs 14 to 22 of the Explanatory Notes.

Overall, the proportion of persons aged 15 years and over involved in sport in a non-playing capacity was at a similar level in 2001, 2004 and 2007 (around 10%), however, the rate was slightly higher in 1997 at 12%. The participation rate was higher for males than females in each survey year (Table 11).

Between 2004 and 2007, the percentage of females involved in non-playing roles increased from 8.1% to 8.9%. For the same period, the percentage of males involved in non-playing roles remained steady at 11.0% (Table 11).

### PARTICIPATION IN NON-PLAYING ROLES - 1997, 2001, 2004 and 2007



The participation rate for persons aged 45-54 increased to 14% in 2007, from 12% in 2004 (Table 11).

## PAYMENT FOR INVOLVEMENT

Of the 4.5 million persons involved in organised sport and physical activity, 8% (348,700 persons) received some type of payment for their involvement (Table 5).

## TIME INVOLVED

In the year to April 2007, 43% of persons involved in playing sport were involved for between 40 and 52 weeks (Table 7).

Half (50%) of the playing involvements were for a period of 3 to 9 hours per week on average. A further 40% averaged less than 3 hours per week (Table 8).

## About this Release

Contains data on the number and characteristics of people involved in organised sport and physical activity, by type of involvement, and whether payment is received.

# Explanatory Notes

## Explanatory Notes

### EXPLANATORY NOTES

## INTRODUCTION

**1** The statistics in this publication were compiled from data collected in the Involvement in Organised Sport and Physical Activity Survey conducted throughout Australia in April 2007 as part of the Monthly Population Survey (MPS).

**2** The publication **Labour Force, Australia** (cat. no. 6202.0) contains information about survey design, sample redesign, scope, coverage and population benchmarks relevant to the monthly Labour Force Survey (LFS), which also apply to supplementary surveys. It also contains definitions of demographic and labour force characteristics, and information about interviewing which are relevant to both the monthly LFS and supplementary surveys.

## SCOPE

**3** The scope of the survey included all persons aged 15 years and over who were usual residents of private dwellings except:

- members of the Australian permanent defence forces
- certain diplomatic personnel of overseas governments, customarily excluded from censuses and surveys
- overseas residents in Australia
- members of non-Australian defence forces (and their dependants) stationed in Australia.

**4** The supplementary survey was conducted in both rural and urban areas in all states and territories, but excluded approximately 120,000 persons living in remote and sparsely settled parts of Australia who would otherwise have been within the scope of the survey. The exclusion of these persons will only have a minor impact on any aggregate estimates that are produced for states and territories, with the exception of the Northern Territory where such persons account for approximately 23% of the population.

## COVERAGE

**5** The estimates in this publication relate to persons covered by the survey in April 2007. In the LFS, coverage rules are applied which aim to ensure that each person is associated with only one dwelling, and hence had only one chance of selection in the survey. See **Labour Force, Australia** (cat. no. 6202.0) for more details.

## DATA COLLECTION

**6** Information was collected through interviews conducted over a two week period in April 2007. Interviews were conducted either face-to-face or over the telephone. Information was obtained from any responsible adult in the household who was asked to respond on behalf of one randomly selected person aged 15 years and over in the household.

**7** In each selected household, information was collected on whether the selected person

was involved in organised sport in either playing or non-playing roles. This excluded persons who were involved only as a spectator or only as a club member. Information was also collected on the characteristics of persons involved, the nature of involvement (whether paid or unpaid) and, for persons involved in non-playing roles, whether they were involved in school or junior sport and whether they had completed a course or held qualifications for the role they performed.

**8** All interviews were conducted using computer assisted interviewing (CAI).

## **SAMPLE SIZE**

**9** Supplementary surveys are not always conducted using the full LFS sample. Since August 1994 the sample for supplementary surveys has been restricted to no more than seven eighths of the LFS sample.

**10** Approximately 94% of selected households were fully responding to the Work in Selected Culture and Leisure Activities Survey. One randomly selected person per household was interviewed for the Work in Selected Culture and Leisure Activities Survey and a total of 26,213 completed interviews were obtained.

## **DATA INTERPRETATION**

**11** Each person could have been involved in one or more of the following six categories of non-playing roles: coach, instructor or teacher; committee member or administrator; referee or umpire; scorer or timekeeper; medical support; and other role. Participation in each category was recorded only once, even if a person was involved in that role for a number of different sports or activities during the 12-month reference period. For example, a person on the committees of a tennis club and a netball club would be recorded only once as being involved as a committee member or administrator. Therefore, figures shown for each playing or non-playing role represent counts of persons involved in that type of role across all organised sport and physical activities.

**12** Each person could have been involved as a player or participant, as well as undertaking one or more non-playing roles. For example, a person who coached and played sport would have been counted once in the 'coach, instructor or teacher' category and once as a 'player'.

**13** Payment status was classified into two categories, namely, some paid involvement and unpaid involvement only. In Tables 2 and 5, where persons were involved in more than one of type of role (e.g., player, coach, etc.) then if they received some payment in dollars or goods and services for their involvement in any of these roles, they would be considered as having some paid involvement. In Table 4, only persons who received some payment in a non-playing role were considered to have some paid involvement. For example, if a person was unpaid for their involvement as a coach but received some payment in dollars or goods and services for their involvement as a player, they would be classified as having 'some paid involvement' in Table 2 and 5, but as 'Unpaid involvement only' in Table 4. Another example would be if a person received some payment for their involvement as a coach but no payment for their involvement as a scorer or timekeeper, they would be classified as having



'some paid involvement' in all tables.

## **COMPARABILITY OF TIME SERIES**

**14** The Involvement in Organised Sport and Physical Activity survey was previously conducted in 1997, 2001 and 2004. Due to changes in the methodology and the questionnaire, caution should be exercised when making comparisons between these surveys.

**15** In 1997, information was obtained from two persons aged 15 years and over in each household. Respondents were asked about involvement in sport in the previous 12 months.

**16** In 2001, information was obtained from a responsible adult who answered on behalf of one randomly selected person aged 15 years and over in each household. Respondents were asked about involvement in organised sport and physical activity in the previous 12 months.

**17** In 2004 the methodology changed and a random sub-sample of 40% of interviews were conducted using computer assisted interviewing (CAI). The remainder of interviews were conducted using the traditional 'pen and paper' method. As in 2001 information was obtained from a responsible adult who answered on behalf of one randomly selected person aged 15 years and over in each household. Respondents were asked about involvement in organised sport and physical activity in the previous 12 months.

**18** The 1997 survey asked about involvement in 'sport'. In contrast, the 2001, 2004 and 2007 surveys asked about involvement in 'organised sport and physical activity'. This change in wording may have had an impact on responses.

**19** The change in wording of the question is likely to have had less impact on responses to non-playing roles, such as being a coach or referee. By definition, these non-playing roles are usually performed as part of an organised activity. In contrast, players or participants may have responded to these two questions differently because player participation in sport can be either organised or non-organised. Hence 'player participation' data have not been compared over time.

**20** While the change in wording of the question from 'sport' to 'organised sport' may have had less impact on responses about non-playing roles (relative to players) there may still have been some impact. When asking about non-paying roles, it is possible that the expansion of the question to include organised 'physical activity' as well as organised 'sport' might have elicited a different response. However, even taking this change in wording into account, it is expected that most people would have reported their non-playing involvement when specifically asked about each role, regardless of whether the initial question asked about 'sport' (in 1997) or 'organised sport and physical activity' (in 2001, 2004 and 2007). Non-player roles have been compared over time in Tables 11 and 12 of this publication, but caution should still be exercised when interpreting these comparisons.

**21** The characteristics of persons involved in at least one non-playing role are compared for

1997, 2001, 2004 and 2007 in Table 11. In all years, respondents were asked if they had been involved in any of the following roles: coach, instructor or teacher; referee or umpire; and committee member or administrator. However, the roles of scorer or timekeeper and medical support were specifically prompted in the 2001, 2004 and 2007 surveys. In 1997 respondents were asked whether there were any 'other' roles they were involved in and, if there were, they were then asked to provide detail about those roles. In 2001, 2004 and 2007, questions were asked about participation in the roles of scorer or timekeeper and medical support prior to asking about participation in any 'other' role. Therefore, it is possible that the 2001, 2004 and 2007 surveys could have elicited different responses from those who were involved in scorer or timekeeper and medical support roles, relative to 1997, due simply to the question wording.

**22** In 1997, the roles of committee member and of administrator were collected separately whereas in 2001, 2004 and 2007 they were collected together under one role of 'committee member or administrator'. For example, in 1997, if a person reported that they were involved as both a committee member and an administrator, they would have been counted as having two separate involvements. In contrast, in subsequent surveys, this same person would have been recorded as having one involvement, (i.e. a committee member or administrator). In order to make comparisons over time, the 1997 data for committee member and administrator were re-analysed and combined into the one non-playing role. For this reason, 1997 estimates for this role as published in Table 12 will be different to those published in **Involvement in Sport, Australia, 1997** (cat. no. 6285.0).

## COMPARABILITY WITH OTHER ABS SURVEYS

**23** Information on participation in sport as a player was also collected in the 2005-06 Multi-Purpose Household Survey (MPHS) and published in **Participation in Sports and Physical Recreation, Australia, 2005-06** (cat. no. 4177.0).

**24** Due to differences in the questions asked, the reference periods and the survey methodologies, caution should be exercised when making comparisons between the surveys. The RSEs of the estimates should also be taken into account. For information on the collection method, reference period and definitions used in the 2005-06 MPHS please refer to **Participation in Sports and Physical Recreation, Australia, 2005-06** (cat. no. 4177.0).

**25** The following table presents comparisons between player participation rates from Involvement in Organised Sport and Physical Activity and Participation in Sports and Physical Recreation.

### PARTICIPATION IN ORGANISED SPORT AS A PLAYER

	Involvement in Organised Sport and Physical Activity (MPS) %	Participation in Sports and Physical Recreation (MPHS)(a) %
Males	26	29
Females	20	26
Persons	23	27

(a) Organised participation only.

## **RELIABILITY OF THE ESTIMATES**

**26** Estimates in this publication are subject to sampling and non-sampling error.

**27** Sampling error is the difference between the published estimate and the value that would have been produced if all dwellings had been included in the survey. For further information in sampling error, refer to the Technical Note.

**28** Non-sampling errors are inaccuracies that occur because of imperfections in reporting by respondents and interviewers, and errors made in coding and processing data. These inaccuracies may occur in any enumeration, whether it be a full count or a sample. Every effort is made to reduce non-sampling error to a minimum by careful design of questionnaires, intensive training and supervision of interviewers and efficient processing procedures.

## **ACKNOWLEDGEMENTS**

**29** ABS surveys draw extensively on information provided by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated, as without it, the wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the **Census and Statistics Act 1905**.

## **NEXT SURVEY**

**30** The ABS plans to conduct this survey again in April 2010.

## **STATE/TERRITORY TABULATIONS**

**31** A series of tables in spreadsheet format equivalent to selected publication tables will be produced for each state and territory (subject to data quality and confidentiality considerations). These tables will be available from the ABS website <<https://www.abs.gov.au>> from the Details tab of this Issue.

## **RELATED PUBLICATIONS**

**32** Other ABS publications which may be of interest include:

**Australian Social Trends, 2007**, cat. no. 4102.0

**Children's Participation in Cultural and Leisure Activities, Australia, April 2006**, cat. no. 4901.0

**How Australians Use Their Time, 1997**, cat. no. 4153.0

**Participation in Sport and Physical Recreation, Australia, 2005-06**, cat. no.

4177.0

**Selected Amusement and Leisure Industries, Australia, 2000-01**, cat. no.

8688.0

**Sport and Recreation, A Statistical Overview, Australia, 2007 Edition 1**, cat. no. 4156.0

**Sports Attendance, Australia, 2005-06**, cat. no. 4174.0

**Sports and Physical Recreation Services, Australia, 2004-05**, cat. no. 8686.0

**Voluntary Work, Australia, 2006**, cat. no. 4441.0

**33** Information about current publications and other products released by the ABS is available from the statistics page on the ABS website. The ABS also issues a daily Release Advice on the website (Future Releases) which details products to be released in the week ahead.

## Glossary

### GLOSSARY

#### Country of birth

Country of birth is classified according to the **Standard Australian Classification of Countries (SACC)** (cat. no. 1269.0)

#### Employed

Employed persons are those aged 15 years and over who, during the week prior to interview:

- worked for one hour or more for pay, profit, commission or payment in-kind in a job or business, or on a farm (comprising employees, employers and own account workers); or
- worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or
- were employees who had a job but were not at work and were: away from work for less than four weeks up to the end of the week prior to interview; away from work for more than four weeks up to the end of the week prior to interview and received pay for some or all of the four week period prior to interview; away from work as a standard work or shift arrangement; on strike or locked out; on worker's compensation and expected to return to their job; or
- were employers or own account workers who had a job, business or farm, but were not at work.

#### Employed full-time

Persons employed full-time are those who usually work 35 hours or more a week (in all jobs) and those who, although usually working less than 35 hours a week, worked 35 hours or more during the reference week.

## **Employed part-time**

Persons employed part-time are those who usually work less than 35 hours per week (in all jobs) and either did so during the reference week or were not at work in the reference week.

## **Involvement in organised sport and physical activity**

Involvement includes players and participants, as well as persons involved in 'non-playing roles'. Respondents could have been involved in more than one non-playing role and/or as a player. Persons who were involved only as a spectator or only as a club member are excluded.

## **Junior sport**

Junior sport includes those sports and physical activities in which young participants are primarily grouped according to age rather than ability. There is no specific age limit applied to this definition because the age criteria for 'junior' sport may vary from sport to sport.

## **Labour force status**

This is a classification of the civilian population aged 15 years and over into employed, unemployed or not in the labour force.

## **Main English speaking countries**

The list of Main English Speaking Countries provided here is not an attempt to classify countries on the basis of whether or not English is the predominant or official language of each country. It is a list of the main countries from which Australia receives, or has received, significant numbers of overseas settlers who are likely to speak English. The list therefore includes South Africa, since although large numbers of South Africans do not speak English as their first language, those who migrate to Australia are likely to speak English. The list does not include country units which are statistically insignificant in the Australian context, although they are English speaking countries.

The set of Main English Speaking Countries used by the ABS consists of:

- Australia
- Canada
- Ireland, Republic of
- New Zealand
- South Africa
- United Kingdom (consisting of England, Scotland, Wales, Northern Ireland)
- United States of America

## **Medical support role**

This role includes persons who indicated that they had been involved as a 'provider of medical support' for organised physical activities or sports. This would include medical practitioners, physiotherapists, first aid attendants, etc.

## **Non-playing roles**

These roles are undertaken to support, arrange and/or run organised sport and physical activity. The six roles included in this survey are: coach, instructor, or teacher; referee or umpire; committee member or administrator; scorer or timekeeper; medical support; and other role.

## **Not in the labour force**

This category consists of those persons who were not in the categories of 'employed' or 'unemployed' as defined.

## **Number of hours of involvement**

For each role, the number of hours of involvement is an estimate of the average number of hours per week for those weeks in which the respondent took part in the role during the 12 months before interview.

## **Number of weeks of involvement**

For each role, the number of weeks of involvement is an estimate of the number of weeks that the respondent had been involved in that particular role during the 12 months prior to interview.

## **Organised sport and physical activity**

This is sport and physical activity that is organised by a club, business or other organisation.

## **Participation rate**

For any group, this is the number of persons involved in organised sport and physical activity, expressed as a percentage of the total population of that group.

## **Payment amount**

Persons could have been paid for their involvement in dollars and/or in goods and services.

The payment reported was that which had been received, or was expected to be received, for the person's involvement in organised sport and physical activity during the 12 months before interview. Where dollars are reported, this is the gross income in dollars (i.e. income before tax and expenses are deducted). The equivalent dollar value for any payment in goods and services was not collected from respondents.

## **Players**

Players includes those who were involved in playing or participating in organised sport or organised physical activity at least once in the 12 months prior to interview. Persons who were players could also have been involved in non-playing roles.

## **Qualification**

For this survey, a qualification is the completion of a course or qualification relevant to the non-playing roles surveyed, regardless of the length of the course or the type of institution offering the course. This may include: training run by sporting associations or clubs; study at educational institutions; and attendance at workshops or seminars.

## **Rest of Australia**

This category includes all of the Australian Capital Territory and Northern Territory, and the six states outside of the capital cities.

## **School sport**

School sport includes those sports and physical activities that are organised by any school or college that caters for students up to and including Year 12. Participation may take place either within or outside of school hours.

## **Some paid involvement**

This includes persons who received, or expected to receive, at least some payment for their involvement in organised sport and physical activity during the 12 months before interview. Payment includes payment in dollars or in goods and services.

## **State capital cities**

The six state capital cities are the Statistical Divisions for those capital cities as defined in **Australian Standard Geographical Classification (ASGC)** (cat. no. 1216.0).

## **Unemployed**

Unemployed persons are those aged 15 years and over who were not employed during the week prior to interview and:

- had actively looked for full-time or part-time work at any time in the four weeks up to the end of the week prior to interview; and
- were available for work in the week prior to interview or were waiting to start a new job within four weeks from the end of the week prior to interview and could have started in the week prior to interview if the job had been available then.

## **Unpaid involvement**

This is involvement in organised sport and physical activity for which no payment (either in dollars or in goods and services) was received or expected.

## **Abbreviations**

### **ABBREVIATIONS**

The following symbols and abbreviations are used in this publication:

ABS	Australian Bureau of Statistics
CAI	computer assisted interviewing
LFS	Labour Force Survey
MPHS	Multi-Purpose Household Survey
MPS	Monthly Population Survey
RSE	relative standard error
SE	standard error

## **Data Cubes (I-Note) - Data Cubes**

These additional datacubes, released 4 April 2008, contain additional data to that previously released in Involvement in Organised Sport and Physical Activity, Australia, April 2007 (ABS Cat. No. 6285.0) on 19 December 2007.

These datacubes are presented in Excel spreadsheet format and present results for individual states and territories in similar table layouts as provided for Australia level data in the publication. Australia level data can also be found in zipped Excel spreadsheet format in the first datacube listed. The table numbering in these datacubes follows that used in the publication to enable easy comparisons between states, territories and Australia. Some tables from this publication have not been reproduced in these datacubes. A list of tables included in these datacubes are shown below.

The level of detail for each table is similar to that contained in the publication. However, due to data quality and confidentiality, some collapsing of rows or columns of data or suppression of cells has been necessary in these datacubes.



List of tables in the additional state and territory datacubes:

1 Persons involved, selected characteristics, by players status and sex

7 Persons involved, by role, sex and number of weeks

8 Persons involved, by role, sex and number of hours per week

9 Persons with non-playing involvement, by role, sex and qualifications

10 Persons with non-playing involvement, in school or junior sport, by role and sex

## Tasmania State Tables (I-Note) - Data Cubes

Tasmania - Tables 7 and 8 are not being released.

## Northern Territory State Tables (I-Note) - Data Cubes

Northern Territory - Tables 7, 8 and 9 are not being released.

## Australian Capital Territory State Tables (I-Note) - Data Cubes

Australian Capital Territory - Tables 7 and 8 are not being released.

## Data Quality (Technical Note)

### TECHNICAL NOTE DATA QUALITY

#### RELIABILITY OF ESTIMATES

1 Since the estimates in this publication are based on information obtained from selected occupants of a sample of dwellings, they are subject to sampling variability; that is, they may differ from those that would have been produced if all dwellings had been included in the survey. One measure of the likely difference is given by the standard error (SE), which indicates the extent to which an estimate might have varied by chance because only a sample of dwellings was included. There are about 2 chances in 3 (67%) that a sample estimate will vary by less than one SE from the number that would have been obtained if all dwellings had been included, and about 19 chances in 20 (95%) that the difference will be less than two SEs. Another measure of the likely difference is the relative standard error (RSE), which is obtained by expressing the SE as a percentage of the estimate.

2 Space does not allow for the separate indication of the SEs and/or RSEs of all the estimates in this publication. However, RSEs for all of these estimates are available free-of-charge on the ABS website <[www.abs.gov.au](http://www.abs.gov.au)>, released in spreadsheet format as an attachment to this publication, **Involvement in Organised Sport and Physical Activity, Australia, 2007** (cat. no. 6285.0). An example table, containing the RSEs for Table 4,

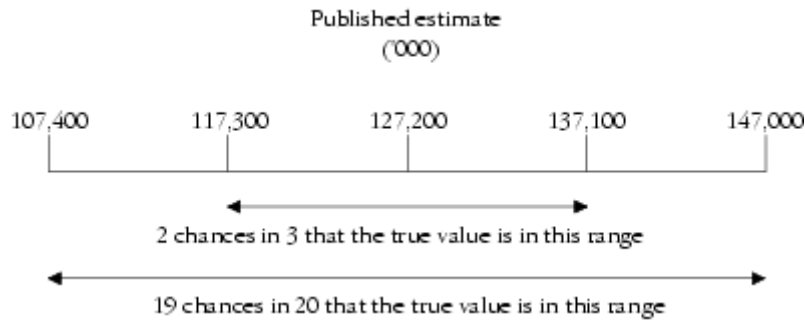
appears at the end of these notes.

### CALCULATION OF STANDARD ERROR

**3** An example of the calculation and the use of SEs in relation to estimates of persons follows. From table 4 an estimated 127,200 males had some paid involvement in organised sport and physical activity during the 12 months prior to interview. In the RSE spreadsheet table, the RSE for this estimate is shown to be 7.8%. The SE is -

$$SE(estimate) = estimate \times \left( \frac{RSE}{100} \right) = 9,900 \text{ (rounded to the nearest 100)}$$

**4** Therefore there are about 2 chances in 3 that the number that would have been produced if all dwellings had been included in the survey will fall within the range 117,300 and 137,100, and about 19 chances in 20 that the value will fall within the range 107,400 and 147,000. This example is illustrated in the diagram below:



**5** In general, the size of the SE increases as the size of the estimate increases. Conversely, the RSE decreases as the size of the estimate increases. Very small estimates are thus subject to such high RSEs that their value for most practical purposes is unreliable. In the tables in this publication, only estimates with an RSE of 25% or less are considered reliable for most purposes. Estimates with an RSE greater than 25% but less than or equal to 50% are preceded by an asterisk (e.g. \*3.4) to indicate they are subject to high SEs and should be used with caution. Estimates with RSEs of greater than 50%, preceded by a double asterisk (e.g. \*\*0.3), are considered too unreliable for general use and should only be used to aggregate with other estimates to provide derived estimates with an RSE of 25% or less.

### PROPORTIONS AND PERCENTAGES

**6** Proportions and percentages formed from the ratio of two related estimates are also subject to sampling errors. The size of the error depends on the accuracy of both the numerator and the denominator. A formula to approximate the RSE of a proportion is given below:

$$RSE\left(\frac{X}{Y}\right) = \sqrt{[RSE(X)]^2 + [RSE(Y)]^2}$$

**7** Considering the example above, the 127,200 males who has some paid involvement in organised sport and physical activity during the 12 months prior to interview represent 14%

of the 883,500 males who were involved in organised sport and physical activity. The RSE of 883,500 is given as 3.5% in the corresponding RSE spreadsheet table. Applying the above formula, the RSE of the proportion is:

$$RSE = \sqrt{(7.8)^2 - (3.5)^2} = 7.0\%$$

**8** This then gives an SE of the percentage (14%) of (7.0/100) x 14 =1.0%. Therefore, there are about 2 chances in 3 that the percentage of Victorian females who were involved in organised sport and physical activity was between 13% and 15% and approximately 19 chances in 20 that the percentage was in the range 12% to 16%.

### DIFFERENCES

**9** Published estimates may also be used to calculate the difference between two survey estimates (of numbers or percentages). Such an estimate is subject to sampling error. The sampling error of the difference between two estimates depends on their SE's and the relationship (correlation) between them. An approximate SE of the difference between two estimates (x-y) may be calculated by the following formula:

$$SE(x-y) = \sqrt{[SE(x)]^2 + [SE(y)]^2}$$

**10** While this formula will only be exact for differences between separate and uncorrelated characteristics of sub-populations it is expected to provide a good approximation for all differences likely to be of interest in this publication.

### SIGNIFICANCE TESTING

**11** Where differences between data items have been noted in the Summary of Findings, they are statistically significant. In this publication a statistically significant difference is one where there are 19 chances in 20 that the difference noted reflects a true difference between population groups of interest rather than being the results of sampling variability.

#### PERSONS WITH NON-PLAYING INVOLVEMENT, By selected characteristics and payment status: Relative Standard Errors

	Some paid involvement	Unpaid involvement only(a)	Total persons	Some paid involvement participation rate(b)	Unpaid participation rate(b)	Total non-playing involvement participation rate(b)
	RSE%	RSE%	RSE%	RSE%	RSE%	RSE%
Sex						
Males	7.8	3.9	3.5	7.8	3.9	3.5
Females	6.8	3.4	3.0	6.8	3.4	3.0
State or territory of usual residence						
New South Wales	13.6	6.1	5.2	13.6	6.1	5.2
Victoria	9.1	4.3	4.0	9.1	4.3	4.0
Queensland	9.7	6.3	5.8	9.7	6.3	5.8

South Australia	13.7	6.1	5.8	13.7	6.1	5.8
Western Australia	12.1	4.2	4.0	12.1	4.2	4.0
Tasmania	28.6	7.3	7.4	28.6	7.3	7.4
Northern Territory(c)	33.4	15.4	13.8	33.4	15.4	13.8
Australian Capital Territory	19.3	9.5	8.1	19.3	9.5	8.1
Age group (years)						
15-24	10.3	7.5	6.3	10.3	7.5	6.3
25-34	11.5	5.7	4.7	11.5	5.7	4.7
35-44	12.5	4.5	4.2	12.5	4.5	4.2
45-54	15.6	3.9	3.5	15.6	3.9	3.5
55-64	18.0	7.6	7.1	18.0	7.6	7.1
65 and over	31.2	6.9	7.2	31.2	6.9	7.2
Labour force status						
Employed full-time	7.5	3.9	3.4	7.5	3.7	3.2
Employed part-time	9.2	3.8	4.0	9.1	4.0	4.1
<i>Total employed</i>	5.6	3.1	2.8	5.5	3.1	2.7
Unemployed	39.0	15.8	16.2	38.2	15.6	15.3
Not in the labour force	19.2	4.7	5.0	19.0	4.8	5.1
Area of usual residence						
State capital city	7.2	3.4	3.0	7.2	3.4	3.0
Rest of Australia	9.4	3.4	3.0	9.4	3.4	3.0
Country of birth						
Australia	5.8	3.2	3.0	5.6	3.0	2.7
Overseas	11.5	4.3	4.1	11.4	4.1	3.8
Main English speaking countries	14.7	6.5	5.7	14.5	6.1	5.2
Other than main English speaking countries	19.3	10.9	9.3	19.0	10.4	8.8
<b>Total</b>	<b>5.4</b>	<b>2.6</b>	<b>2.4</b>	<b>5.4</b>	<b>2.6</b>	<b>2.4</b>

(a) Includes those who did not know whether they would be paid for their involvement

(b) The number of persons involved in organised sport or physical activity expressed as a percentage of the population in the same group.

(c) Refers to mainly urban areas only. For further information refer to paragraph 4 of the Explanatory Notes.